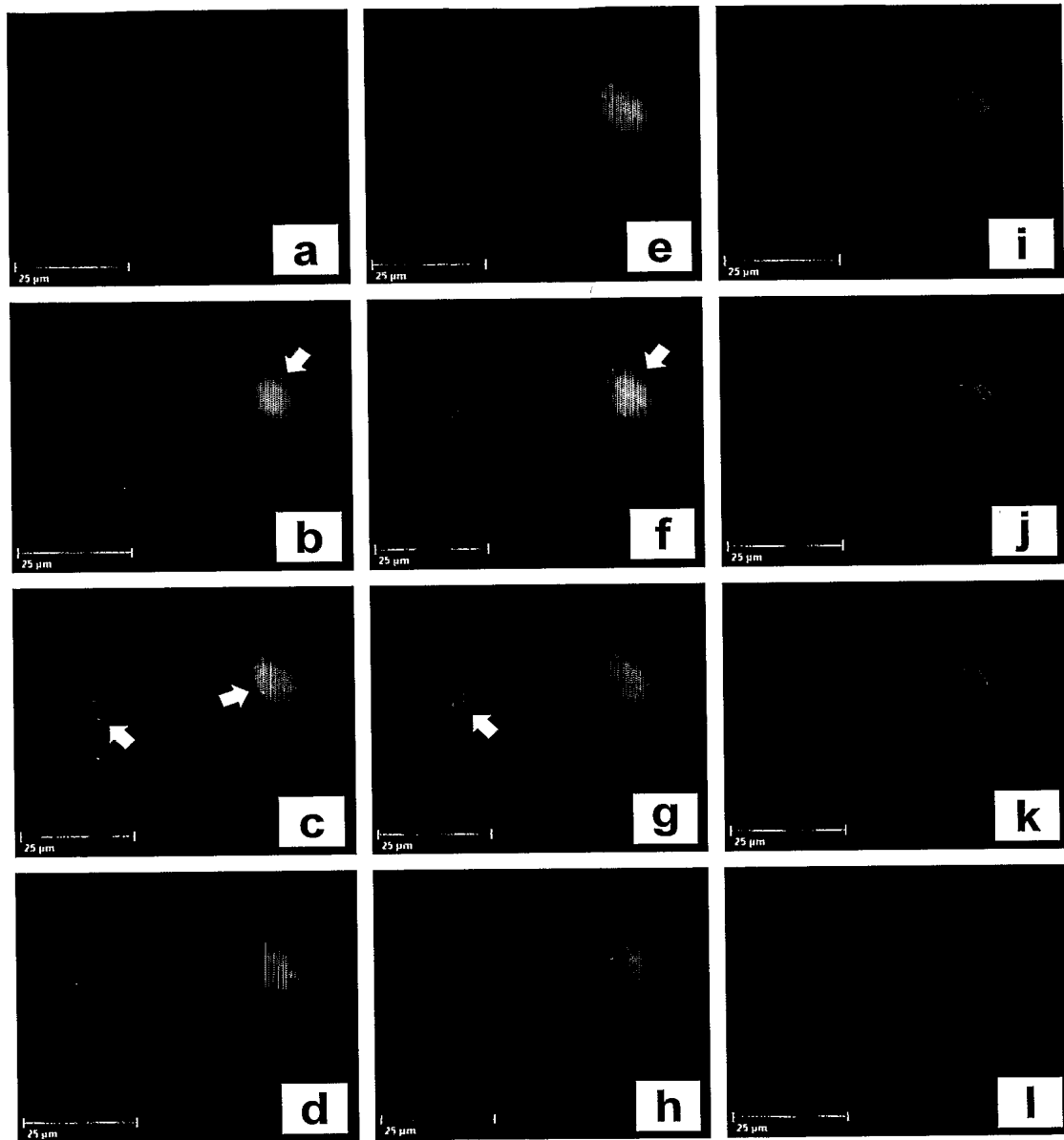
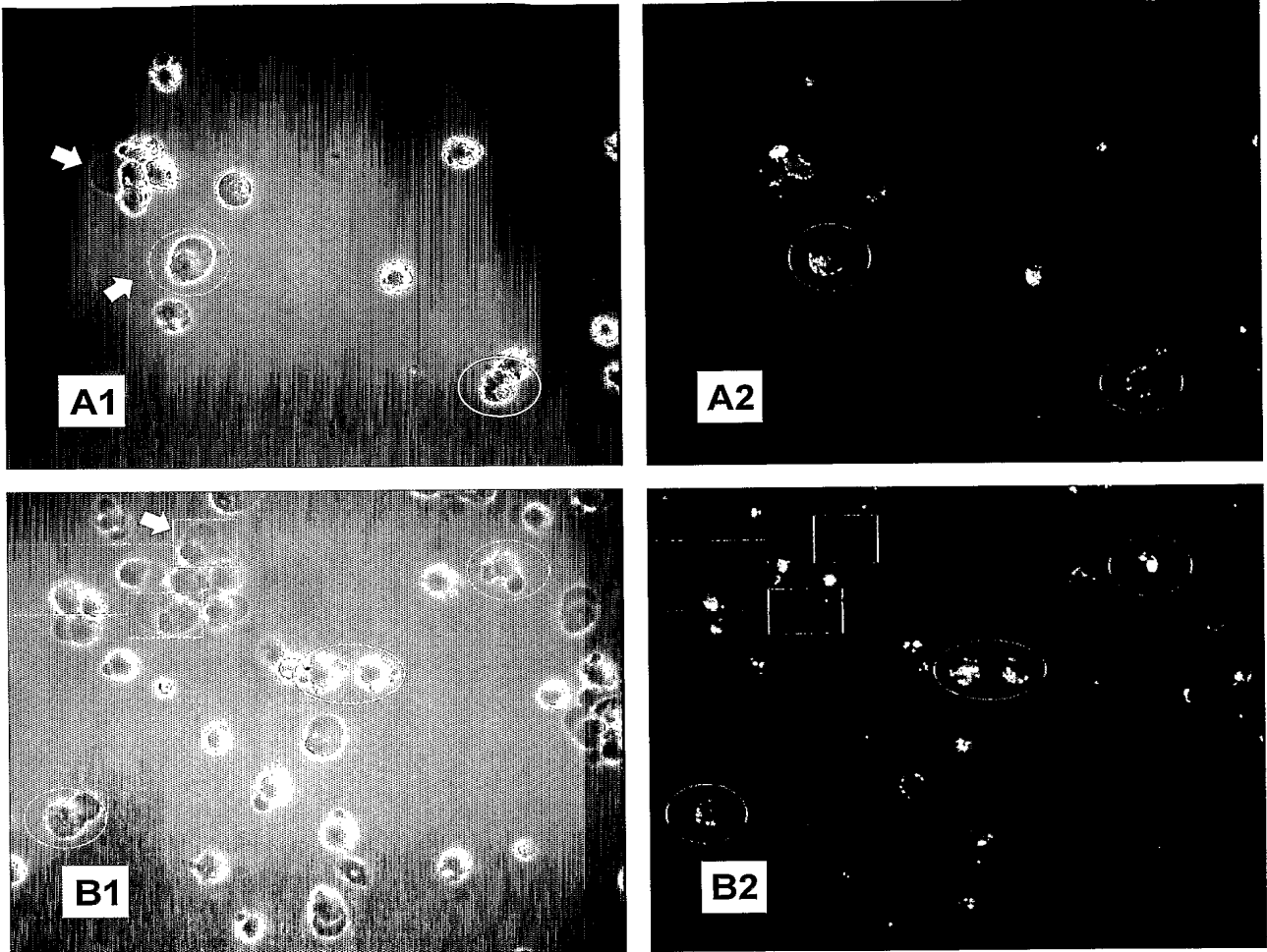
**FIG. 1**

Basic morphological appearance of human myeloid dendritic cells (mDCs) during differentiation *in vitro*.



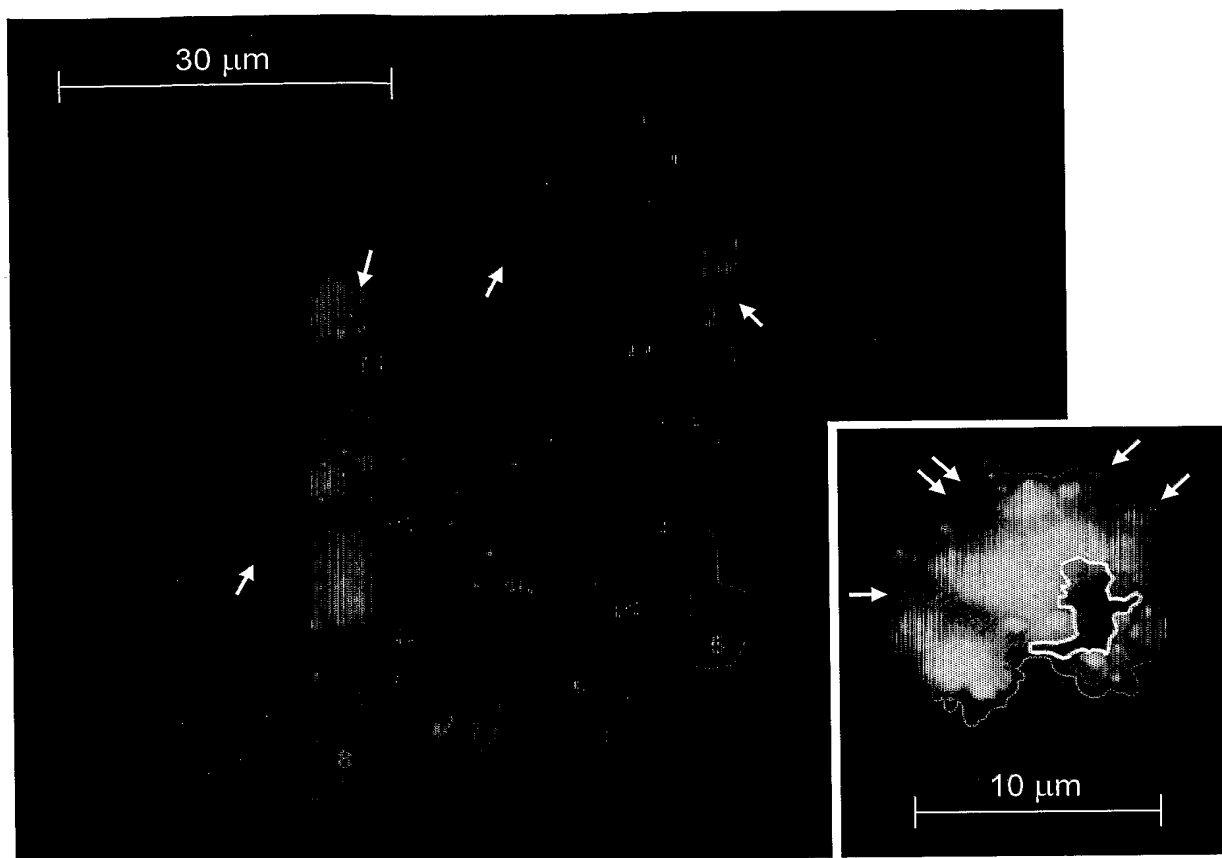
Serial Optical sections through immature myeloid dendritic cells (mDCs) targeted with *fucose-labeled* liposomes delivering the tracer dye calcein.

FIG. 2

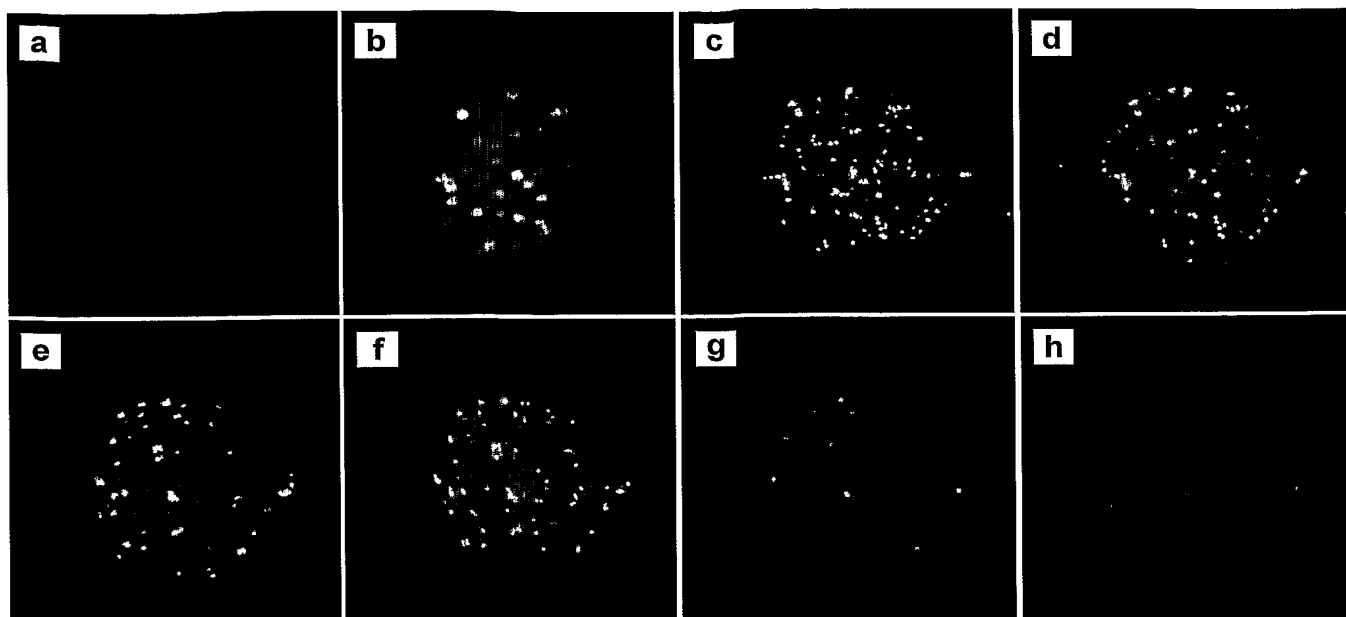


Binding and uptake of *mannose-labeled* liposomes by immature mDCs after 5 days of culture.

FIG. 3

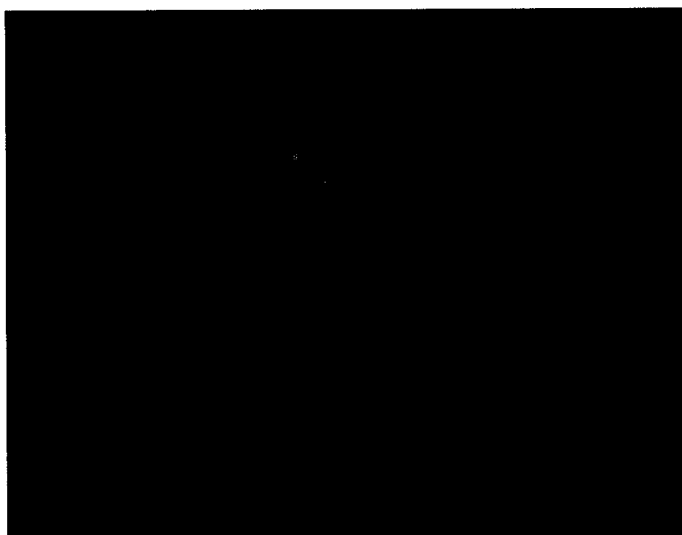
**FIG. 4**

C-type lectin-specific targeting of clustered mature mDCs.



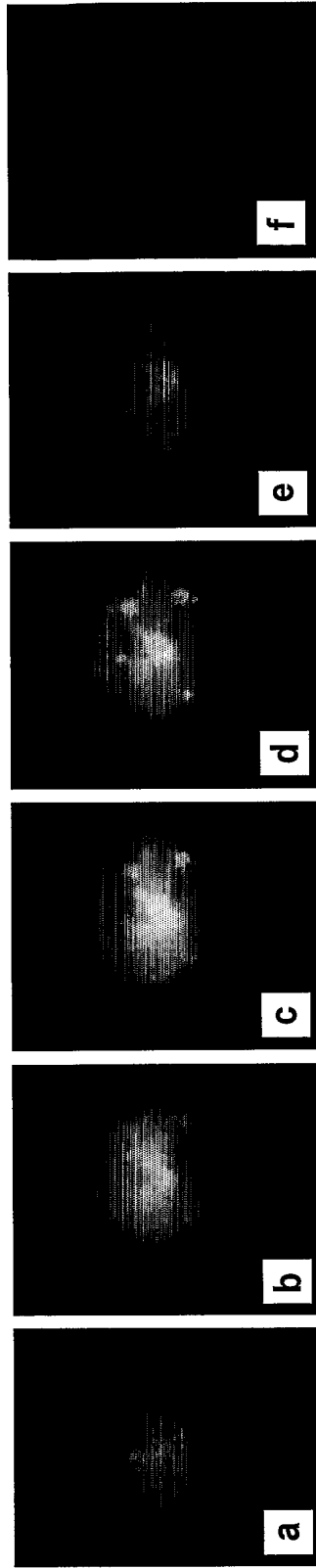
Binding and uptake of *fucose-labeled* liposomes by human macrophages after 7 days of culture.

FIG. 5



Color fluorescence photomicrograph of a representative macrophage from a different donor 2 hours after targeting with *fucose-labeled* liposomes.

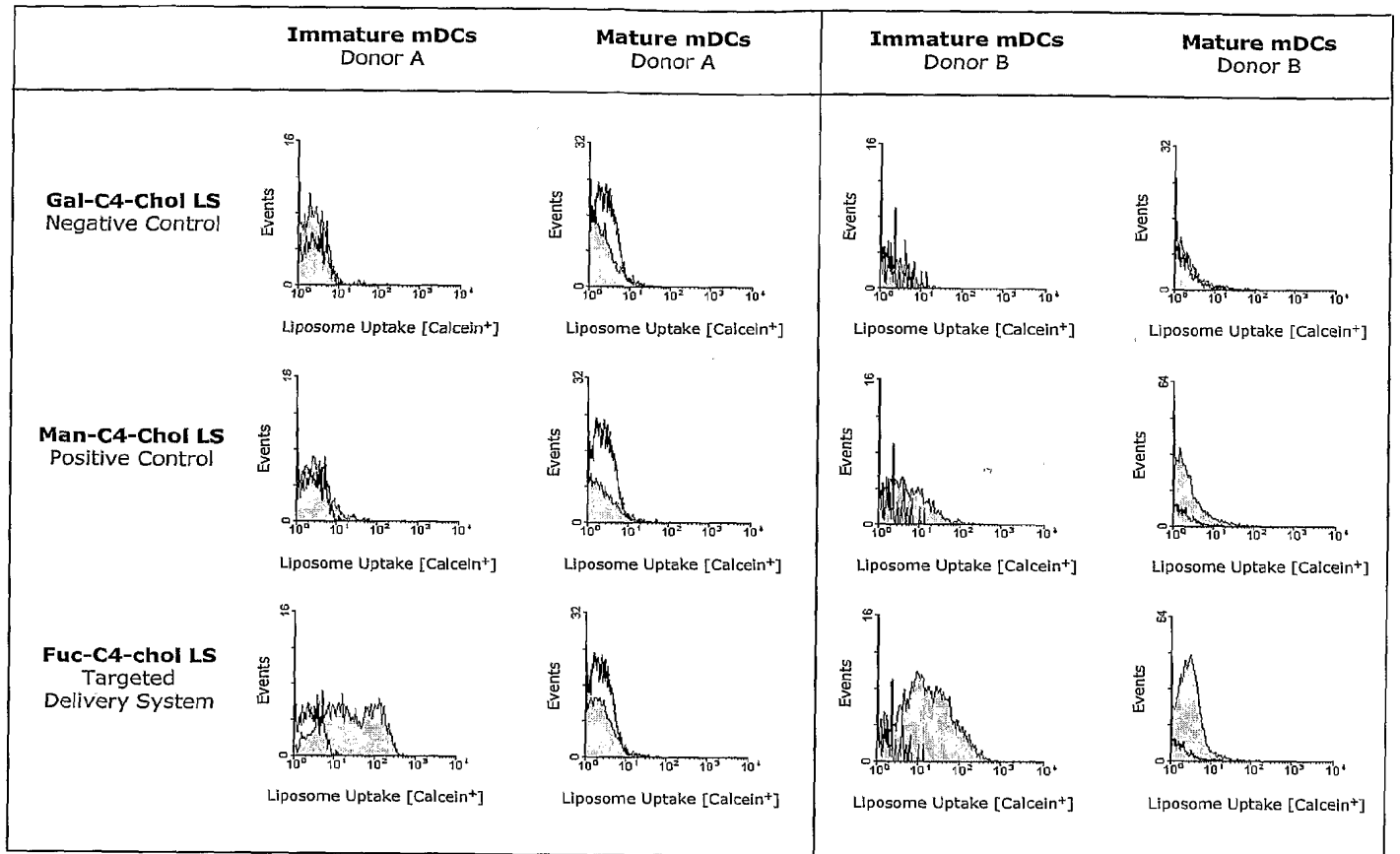
FIG. 6



Serial optical sections through a monocyte targeted with *Fuc-4C-Chol-labeled* liposomes delivering the tracer dye calcein.

Fig. 7

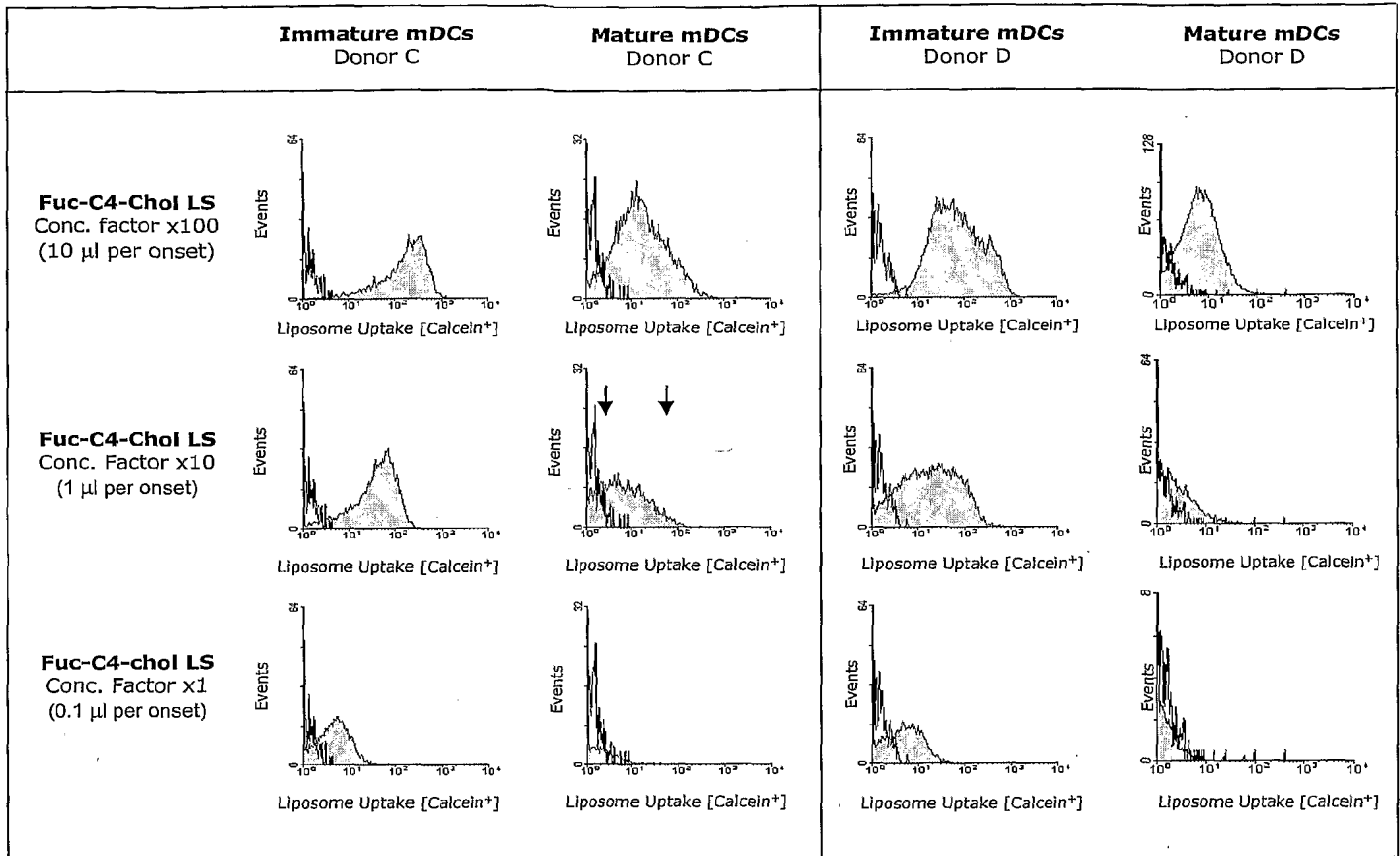
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The fucose-targeted compound delivery system is highly specific and has an extremely high targeting efficacy.

FIG. 8

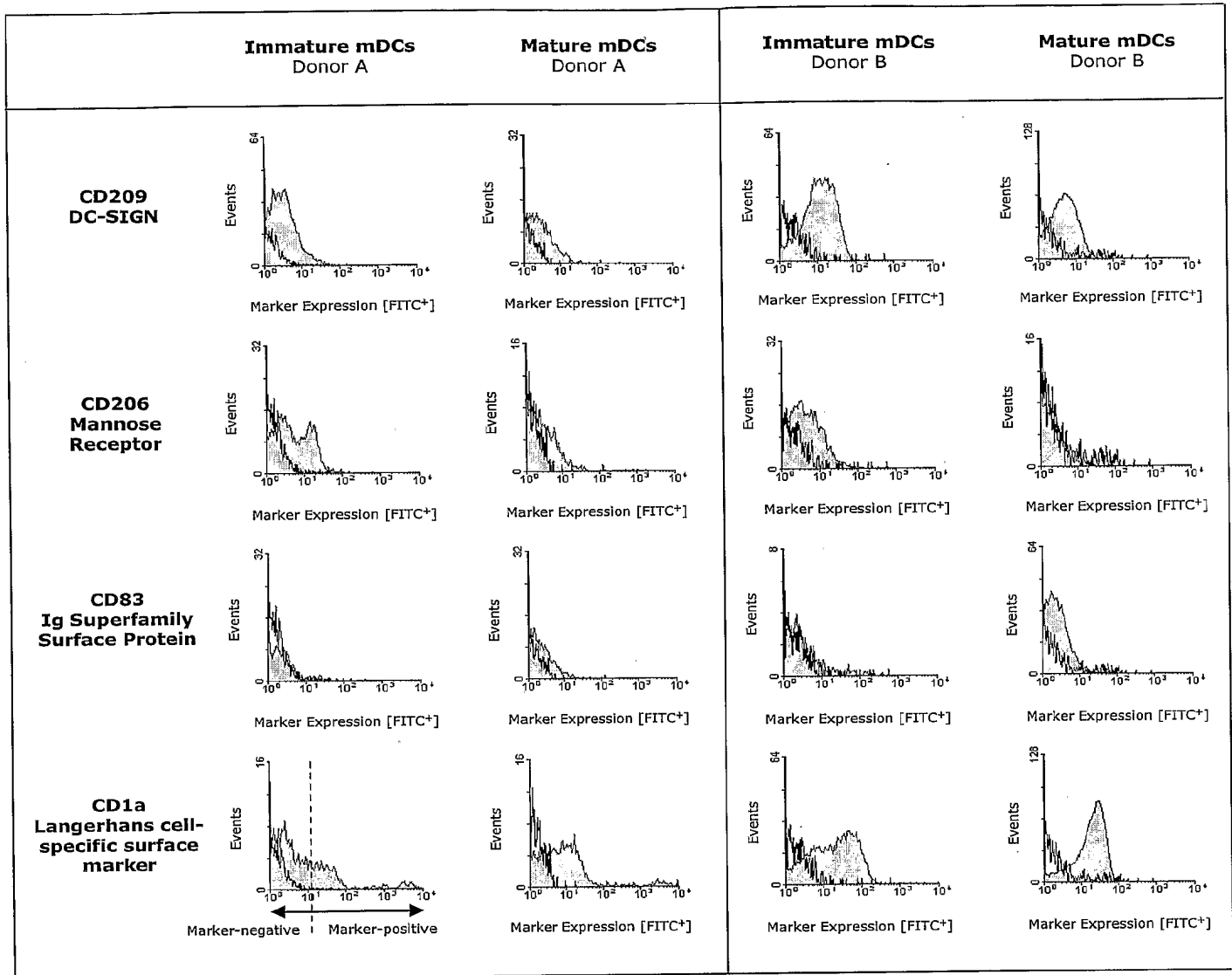
8/13



Increased concentrations of fucose-labeled liposomes targets both immature and mature mDCs highly efficiently.

FIG. 9

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Phenotyping of immature and mature myeloid dendritic cells.

FIG. 10

Morphological changes in mDCs after 8-day culture of HIV-infected mDCs upon or without targeted treatment. 1. Culture appearance and homotypic mDC clustering.

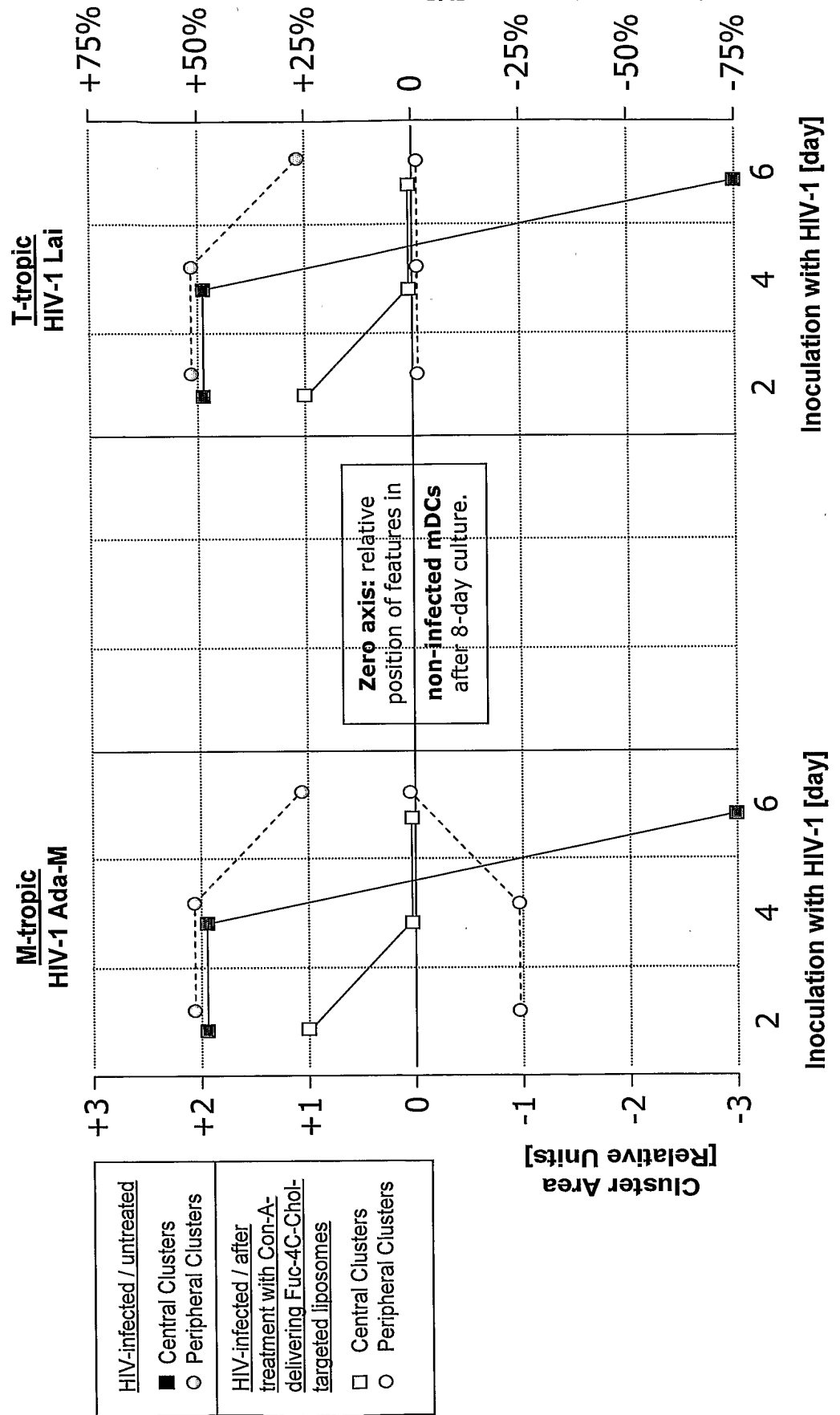
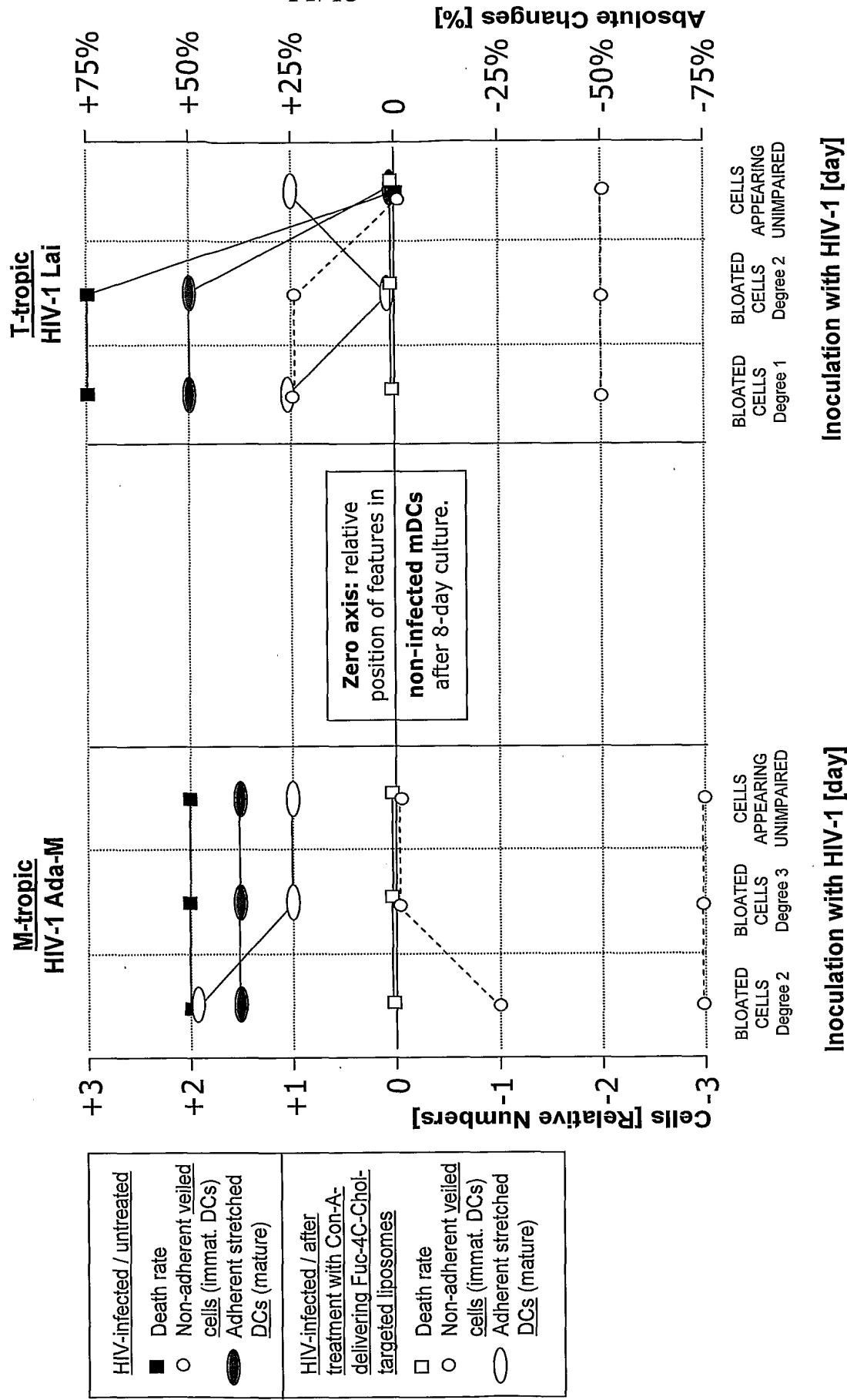


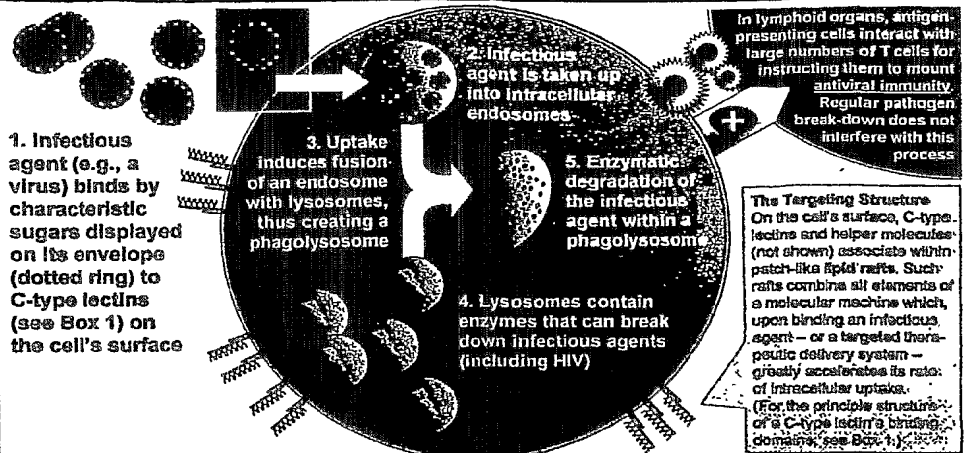
FIG. 12
Morphological changes in mDCs after 8-day culture of HIV-infected mDCs upon or without targeted treatment. II. Types of mDCs and viability.



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Fig. 13. (I) Normal Pathogen Elimination, (II) Evasion by HIV; and (III) The Inventive Carbohydrate-Lectin Targeting and Treatment System.**I. Normal Destruction of an Infectious Agent**

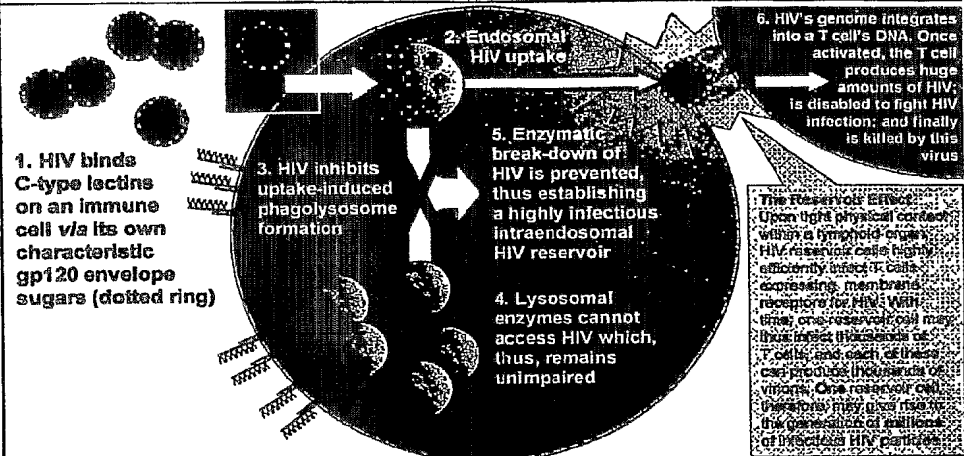
In the human immune system, the first cells recognizing infectious agents are antigen-presenting cells (dendritic cells, macrophages, and others). Normally, these cells digest and dismantle infectious agents presenting their fragments to T cells for induction of specific immunity. The large circle represents such a cell, as well as key processes involved in the recognition and destruction of infectious agents. The cell section on the upper right depicts a T cell instructed for action.

**II. Evasion of Destruction by HIV and Formation of a Chronic HIV Reservoir**

HIV reservoir populations can retain highly infectious virus for prolonged, yet different periods of time, i.e.,

- Days to months (dendritic cells);
- Months (follicular dendritic cells);
- Months to years (macrophages);
- Years (T-memory cells)

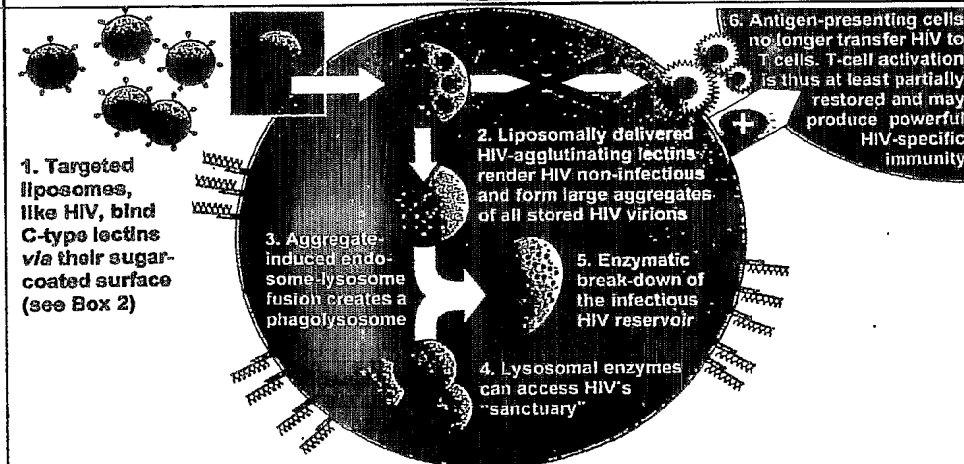
Dendritic cells, with their high turnover rate, their many physiologic subsets, and their extremely tight and frequent physical interaction with T cells, strike as the most virulent HIV reservoir when compared to the other reservoir cells.

**III. Elimination of the HIV Reservoir: a Two-Step Process Mediated by Carbohydrate-Lectin Interaction****1st Level:**

Specific liposomal targeted delivery to the reservoir cell's surface lectins, with subsequent endosomal uptake of the liposomes;

2nd Level:

Delivery of liposomally encased HIV-agglutinating lectins into the endosomes leads to the break-down of the infectious endosomal HIV reservoir

**Box 1: Cellular Targeting Structure**

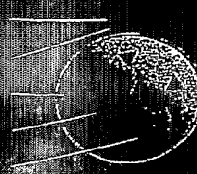
Carbohydrate (Sugar) Recognition Domain (CRD) of a C-Type Lectin *



* C-type lectin-like domains expressed by T-memory and NK HIV-reservoir cells also bear CRDs and thus can be targeted, too

Box 2: Liposomal Targeting & Delivery System

Carbohydrate (Sugar) Labeling
Cholesterol Membrane Anchor
Liposome Membrane
Aqueous Interior
Therapeutic Payload (Lectin)



Note that some of the processes depicted are simplified and/or do not reflect actual sizes and ratios

